

# NATIONAL GEOGRAPHIC RESEARCH

## Volume 3, 1987

Harm J. de Blij, Editor

J. Erwin, Associate Editor

© 1987, National Geographic Society

## VOLUME 3, NUMBER 1, WINTER 1987

LETTERS . . . . . 4

### BOOK REVIEWS

**Romans and Saracens: a History of the Arabian Frontier** by S. Thomas Parker. **The Colorado River: Instability and Basin Management** by William L. Graf. **Fur Seals: Maternal Strategies on Land and Sea** by Roger L. Gentry . . . . . 5

### ARTICLES

**Behavior and Thermal Relations of the Arboreal Frog *Phyllomedusa sauvagii***. Lon L. McClanahan and Vaughan H. Shoemaker . . . . . 11

**Native Agriculture in the Highlands of the Peruvian Andes**. Augusto Cardich . . . . . 22

**Southbound through Colorado: Migration of Rufous Hummingbirds**. William A. Calder III . . . . . 40

**Early Water Management at Amalucan, State of Puebla, Mexico**. Melvin L. Fowler . . . . . 52

**Late Precambrian Glacial Deposits from Liberia, Sierra Leone, and Senegal, West Africa**. Stephen J. Culver and A. W. Magee . . . . . 69

**Biosonar Imaging of Insects by *Pteronotus p. parnellii*, the Mustached Bat**. O'Dell W. Henson Jr., Allen Bishop, Arthur Keating, James Kobler, Miriam Henson, Blake Wilson, and Russell Hansen . . . . . 82

**The Sanctuary of Hermes and Aphrodite at Syme, Crete**. Angeliki Lebesi and Polymnia Muhly . . . . . 102

**Biochemical Genetic Variation in Geographic Isolates of African and Asiatic Lions**. Stephen J. O'Brien, Janice S. Martenson, Craig Packer, Lawrence Herbst, Valerius de Vos, Paul Joslin, Janis Ott-Joslin, David E. Wildt, and Mitchell Bush . . . . . 114

### FORUM

**Ants in Live Oak Galls in Texas**. John T. Longino and Jeanette Wheeler . . . . . 125

NOTED ELSEWHERE . . . . . 128

## VOLUME 3, NUMBER 2, SPRING 1987

LETTERS . . . . . 136

### BOOK REVIEWS

**Guide to Fossil Man** by Michael H. Day. **Fruits of the Guianan Flora** by Marc G. M. van Rosmalen. **Wild Horses of the Great Basin** by Joel Berger . . . . . 139

### ARTICLES

**Reconstruction of Mid-Wisconsin Environments in Southern New Mexico**. Arthur H. Harris . . . . . 142

**Radio-tracking Masked and Blue-footed Boobies (*Sula* spp.) in the Galápagos Islands**. David J. Anderson and Robert E. Ricklefs . . . . . 152

**The Politics of Ritual and the Ritual of Politics: Holy Week in Nabenchauk, Mexico**. John B. Haviland . . . . . 164

**A Pleistocene-Early Holocene Rock Shelter in Peninsular Thailand**. Douglas D. Anderson . . . . . 184

**The Spanish External Sierra: a Case History in the Advance and Retreat of Mountains**. Declan G. De Paor and David J. Anastasio . . . . . 199

**Devonian Conulariids of Bolivia**. Loren E. Babcock, Rodney M. Feldmann, Margaret T. Wilson, and Mario Suárez-Riglos . . . . . 210

**Ancient Society in Santa Bárbara, Honduras**. Wendy Ashmore, Edward M. Schortman, Patricia A. Urban, Julie C. Benyo, John M. Weeks, and Sylvia M. Smith . . . . . 232

NOTED ELSEWHERE . . . . . 255

GRANTS AWARDED, 1986 . . . . . 259

## VOLUME 3, NUMBER 3, SUMMER 1987

LETTERS . . . . . 272

### BOOK REVIEWS

**Spiders: Webs, Behavior, and Evolution** by William A. Shear (editor). **The Chimpanzees of Gombe: Patterns of Behavior** by Jane Goodall. **The Botany of Mangroves** by P. B. Tomlinson. **American Electoral Mosaics** by J. Clark Archer and Fred M. Shelley . . . . . 273

### ARTICLES

**Division of Labor and Diet in the Extremely Polymorphic Ant *Pheidologeton diversus***. Mark W. Moffett . . . . . 282

**Herpetofauna of New Trout Cave**. J. Alan Holman and Frederick Grady . . . . . 305

**Tension Regulation and Nonreproductive Functions of Sex in Captive Bonobos (*Pan paniscus*)**. Frans B. M. de Waal . . . . . 318

**The Milliped *Stenodesmus tuobitus* (Chamberlin) (Polydesmida: Xystodesmidae) in Texas and New Mexico**. Rowland M. Shelley . . . . . 336

**Genetic Structure and Chromosomal Evolution in the *Sceloporus grammicus* Complex**. Jack W. Sites Jr., Calvin A. Porter, and Pamela Thompson . . . . . 343

**The U-shaped Pyramid Complex, Cardal, Peru**. Richard L. Burger . . . . . 363

**An Early Eocene (Wasatchian) Mammal Fauna from Baja California**. Michael J. Novacek, John J. Flynn, Ismael Ferrusquia-Villafranca, and Robert M. Cipolletti . . . . . 376

### FORUM

**Sponge-eating by *Pungu macleareni*, an Endemic Cichlid Fish from Lake Barombi Mbo, Cameroon**. Wallace J. Dominy . . . . . 389

NOTED ELSEWHERE . . . . . 394

REPORTS RECEIVED, 1986 . . . . . 396

## VOLUME 3, NUMBER 4, AUTUMN 1987

### BOOK REVIEWS

**The Sculpture of Palenque** by Merle Green Robertson. **Neogene Paleontology and Geology of Sahabi** by Noel T. Boaz, Ali El-Arnauti, Abdel Wahid Gaziry, Jean de Heinzelin, and Dorothy Dechant Boaz. **The Diffusion of Influenza: Patterns and Paradigms** by Gerald Pyle . . . . . 404

### ARTICLES

**Medical Anthropology in the Western Schrader Range, Papua New Guinea**. Carol L. Jenkins . . . . . 412

**Evidence for the First Nuclear-age Recharge of Shallow Groundwater, Arba'in Desert, Egypt**. C. Vance Haynes Jr., Peter J. Mehringer Jr., Donald L. Johnson, Herbert Haas, Anthony B. Muller, El Sayed El Zaghloul, Ahmed Swedan, and T. A. Wyerman . . . . . 431

**Elephant Teeth from the Western Gulf of Maine, and Their Implications**. Robert N. Oldale, Frank C. Whitmore Jr., and John R. Grimes . . . . . 439

**Ecology and Behavior of Ocelots in Venezuela**. Mark E. Ludlow and Melvin E. Svanquist . . . . . 447

**Tracking Caribou Using Satellite Telemetry**. Derek J. Craighead and John J. Craighead . . . . . 462

**Penguins and Purse Seiners: Competition or Coexistence?** David C. Duffy, Rory P. Wilson, Robert E. Ricklefs, Stephen C. Broni, and Helen Veldhuis . . . . . 480

**Lizards in an Amazonian Rain Forest Community: Resource Utilization and Abundance**. William E. Duellman . . . . . 489

**Regulation of Mussel Population Structure in Prince William Sound, Alaska**. Glenn R. VanBlaricom . . . . . 501

### FORUM

**A Desert Shrine in Grand Canyon, Arizona, and the Role of Split-twig Figurines**. Steven D. Emslie, Robert C. Euler, and Jim I. Mead . . . . . 511

NOTED ELSEWHERE . . . . . 517

REVIEWERS FOR VOLUME 3 . . . . . 518

INDEX TO VOLUME 3 . . . . . 520

CONTENTS OF VOLUME 3 . . . . . 528

# NATIONAL GEOGRAPHIC RESEARCH

## Volume 3, 1987

Harm J. de Blij, Editor

J. Erwin, Associate Editor

© 1987, National Geographic Society

## VOLUME 3, NUMBER 1, WINTER 1987

LETTERS . . . . . 4

### BOOK REVIEWS

**Romans and Saracens: a History of the Arabian Frontier** by S. Thomas Parker. **The Colorado River: Instability and Basin Management** by William L. Graf. **Fur Seals: Maternal Strategies on Land and Sea** by Roger L. Gentry . . . . . 5

### ARTICLES

**Behavior and Thermal Relations of the Arboreal Frog *Phyllomedusa sauvagii***. Lon L. McClanahan and Vaughan H. Shoemaker . . . . . 11

**Native Agriculture in the Highlands of the Peruvian Andes**. Augusto Cardich . . . . . 22

**Southbound through Colorado: Migration of Rufous Hummingbirds**. William A. Calder III . . . . . 40

**Early Water Management at Amalucan, State of Puebla, Mexico**. Melvin L. Fowler . . . . . 52

**Late Precambrian Glacial Deposits from Liberia, Sierra Leone, and Senegal, West Africa**. Stephen J. Culver and A. W. Magee . . . . . 69

**Biosonar Imaging of Insects by *Pteronotus p. parnellii*, the Mustached Bat**. O'Dell W. Henson Jr., Allen Bishop, Arthur Keating, James Kobler, Miriam Henson, Blake Wilson, and Russell Hansen . . . . . 82

**The Sanctuary of Hermes and Aphrodite at Syme, Crete**. Angeliki Lebesi and Polymnia Muhly . . . . . 102

**Biochemical Genetic Variation in Geographic Isolates of African and Asiatic Lions**. Stephen J. O'Brien, Janice S. Martenson, Craig Packer, Lawrence Herbst, Valerius de Vos, Paul Joslin, Janis Ott-Joslin, David E. Wildt, and Mitchell Bush . . . . . 114

### FORUM

**Ants in Live Oak Galls in Texas**. John T. Longino and Jeanette Wheeler . . . . . 125

NOTED ELSEWHERE . . . . . 128

## VOLUME 3, NUMBER 2, SPRING 1987

LETTERS . . . . . 136

### BOOK REVIEWS

**Guide to Fossil Man** by Michael H. Day. **Fruits of the Guianan Flora** by Marc G. M. van Rosmalen. **Wild Horses of the Great Basin** by Joel Berger . . . . . 139

### ARTICLES

**Reconstruction of Mid-Wisconsin Environments in Southern New Mexico**. Arthur H. Harris . . . . . 142

**Radio-tracking Masked and Blue-footed Boobies (*Sula* spp.) in the Galápagos Islands**. David J. Anderson and Robert E. Ricklefs . . . . . 152

**The Politics of Ritual and the Ritual of Politics: Holy Week in Nabenchauk, Mexico**. John B. Haviland . . . . . 164

**A Pleistocene-Early Holocene Rock Shelter in Peninsular Thailand**. Douglas D. Anderson . . . . . 184

**The Spanish External Sierra: a Case History in the Advance and Retreat of Mountains**. Declan G. De Paor and David J. Anastasio . . . . . 199

**Devonian Conulariids of Bolivia**. Loren E. Babcock, Rodney M. Feldmann, Margaret T. Wilson, and Mario Suárez-Riglos . . . . . 210

**Ancient Society in Santa Bárbara, Honduras**. Wendy Ashmore, Edward M. Schortman, Patricia A. Urban, Julie C. Benyo, John M. Weeks, and Sylvia M. Smith . . . . . 232

NOTED ELSEWHERE . . . . . 255

GRANTS AWARDED, 1986 . . . . . 259

## VOLUME 3, NUMBER 3, SUMMER 1987

LETTERS . . . . . 272

### BOOK REVIEWS

**Spiders: Webs, Behavior, and Evolution** by William A. Shear (editor). **The Chimpanzees of Gombe: Patterns of Behavior** by Jane Goodall. **The Botany of Mangroves** by P. B. Tomlinson. **American Electoral Mosaics** by J. Clark Archer and Fred M. Shelley . . . . . 273

### ARTICLES

**Division of Labor and Diet in the Extremely Polymorphic Ant *Pheidologeton diversus***. Mark W. Moffett . . . . . 282

**Herpetofauna of New Trout Cave**. J. Alan Holman and Frederick Grady . . . . . 305

**Tension Regulation and Nonreproductive Functions of Sex in Captive Bonobos (*Pan paniscus*)**. Frans B. M. de Waal . . . . . 318

**The Milliped *Stenodesmus tuobitus* (Chamberlin) (Polydesmida: Xystodesmidae) in Texas and New Mexico**. Rowland M. Shelley . . . . . 336

**Genetic Structure and Chromosomal Evolution in the *Sceloporus grammicus* Complex**. Jack W. Sites Jr., Calvin A. Porter, and Pamela Thompson . . . . . 343

**The U-shaped Pyramid Complex, Cardal, Peru**. Richard L. Burger . . . . . 363

**An Early Eocene (Wasatchian) Mammal Fauna from Baja California**. Michael J. Novacek, John J. Flynn, Ismael Ferrusquia-Villafranca, and Robert M. Cipolletti . . . . . 376

### FORUM

**Sponge-eating by *Pungu maclareni*, an Endemic Cichlid Fish from Lake Barombi Mbo, Cameroon**. Wallace J. Dominy . . . . . 389

NOTED ELSEWHERE . . . . . 394

REPORTS RECEIVED, 1986 . . . . . 396

## VOLUME 3, NUMBER 4, AUTUMN 1987

### BOOK REVIEWS

**The Sculpture of Palenque** by Merle Green Robertson. **Neogene Paleontology and Geology of Sahabi** by Noel T. Boaz, Ali El-Arnauti, Abdel Wahid Gaziry, Jean de Heinzelin, and Dorothy Dechant Boaz. **The Diffusion of Influenza: Patterns and Paradigms** by Gerald Pyle . . . . . 404

### ARTICLES

**Medical Anthropology in the Western Schrader Range, Papua New Guinea**. Carol L. Jenkins . . . . . 412

**Evidence for the First Nuclear-age Recharge of Shallow Groundwater, Arba'in Desert, Egypt**. C. Vance Haynes Jr., Peter J. Mehringer Jr., Donald L. Johnson, Herbert Haas, Anthony B. Muller, El Sayed El Zaghloul, Ahmed Swedan, and T. A. Wyerman . . . . . 431

**Elephant Teeth from the Western Gulf of Maine, and Their Implications**. Robert N. Oldale, Frank C. Whitmore Jr., and John R. Grimes . . . . . 439

**Ecology and Behavior of Ocelots in Venezuela**. Mark E. Ludlow and Melvin E. Svanquist . . . . . 447

**Tracking Caribou Using Satellite Telemetry**. Derek J. Craighead and John J. Craighead . . . . . 462

**Penguins and Purse Seiners: Competition or Coexistence?** David C. Duffy, Rory P. Wilson, Robert E. Ricklefs, Stephen C. Broni, and Helen Veldhuis . . . . . 480

**Lizards in an Amazonian Rain Forest Community: Resource Utilization and Abundance**. William E. Duellman . . . . . 489

**Regulation of Mussel Population Structure in Prince William Sound, Alaska**. Glenn R. VanBlaricom . . . . . 501

### FORUM

**A Desert Shrine in Grand Canyon, Arizona, and the Role of Split-twig Figurines**. Steven D. Emslie, Robert C. Euler, and Jim I. Mead . . . . . 511

NOTED ELSEWHERE . . . . . 517

REVIEWERS FOR VOLUME 3 . . . . . 518

INDEX TO VOLUME 3 . . . . . 520

CONTENTS OF VOLUME 3 . . . . . 528

